TYSON S. BARRETT, PhD

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PROFILE

Data science leader with 10+ years of experience in analytics, statistical modeling, and team management. Expertise in developing analytic tools, implementing data-driven strategies, and optimizing resource allocation. Proven track record leading cross-functional and interdisciplinary teams across analytics, finance, product management, and research to enhance operational efficiency. Have supported the transition to open source tools to save on data analytics and processing costs.

EDUCATION

Ph.D. Quantitative Psychology, Utah State University   *Feb 2018*
    Dissertation: Marginal Mediation Analysis: A New Framework for Interpretable Mediated Effects

B.S. Economics, Utah State University, *Cum Laude*   *May 2014*

B.S. Psychology, Utah State University, *Cum Laude*   *May 2014*

PROFESSIONAL EXPERIENCE

Manager, Advanced Analytics   *2022-Present*
Highmark Health, Enterprise Analytics

- Manage a team of six analysts and statisticians collaborating with physicians leveraging data assets
- Develop and implement statistical and econometric models producing cost reductions of $4+ million per year
- Supported the application and award receipt of $10+ million in grants and contracts for research
- Create dashboards and analytic tools for tracking key performance metrics for early action on healthcare trends
- Establish workflows for data processing and analysis across departments
- Analyze healthcare claims and EHR data to identify opportunities to reduce costs and improve outcomes
- Collaborate with Finance to refine cost models

Research Scientist   *2022-Present*
Utah State University, Department of Communication Disorders

- Co-investigator on NIH-funded projects in the Human Interaction Lab, supporting $5+ million in grant funding
- Develop statistical models to analyze complex healthcare data
- Collaborate with cross-functional teams on research strategy

Research Assistant Professor   *2018-2022*
Utah State University, Department of Psychology

- Managing Director of the Data Science & Discovery Unit
- Administrator of data management systems (SONA, REDCap)
- Developed analytic tools and dashboards for research metrics
- Led cross-functional teams in implementing data-driven strategies

Statistical and Data Science Consultant   *2016-2018*
Utah State University

- Provided statistical analysis and data science consulting across disciplines
- Created visualization tools for tracking key metrics

TECHNICAL SKILLS

Programming Languages: R, Python, JavaScript, C
Data Analysis Tools: Statistical modeling, Machine learning, Predictive analytics
Database Systems: SQL (Oracle, Teradata), REDCap, MongoDB, DuckDB, Arrow
Visualization Tools: R Shiny, ggplot2, Tableau
Resource Analytics: Cost modeling, Pricing optimization, Operational efficiency analysis
Statistical Methods: Regression analysis, Mediation analysis, Multilevel modeling

RELEVANT PROJECTS & ACHIEVEMENTS

Data & Cost Analysis Projects
- Created cost models for healthcare delivery analyzing claims data
- Developed analytic tools to assess financial impact of healthcare interventions
- Implemented cost strategies based on predictive models of resource utilization
- Analyzed cost data for special education programs, resulting in policy recommendations
- Led workflow optimization projects resulting in 15% improvement in team efficiency
- Collaborated with finance teams on revenue optimization initiatives
- Highly rated manager and mentor (via Glint Surveys)

Data Tool Development
- **data.table Maintainer** (2023-Present): Core contributor to one of R's most powerful data packages used by thousands of data scientists worldwide
- **tidyfast** (2019): Created R package for efficient data manipulation
- **furniture** (2018): Developed R package for data summary and analysis
- **MarginalMediation** (2018): Built statistical package for advanced mediation analysis
- **autoscore** (2019): Created automated scoring system with web application

GRANT LEADERSHIP EXPERIENCE

NSF POSE Phase II Consultant   *2023-2025*
"Expanding the data.table ecosystem for efficient big data manipulation in R"
$731,000 funding

NIH R01 Co-Investigator (Multiple grants)   *2022-Present*
Leading data analytics components on grants totaling over $5M
Developing resource allocation models and cost-benefit analyses

Research Analytics Leadership
Experience managing research analytics under grant funding totaling over $9M
Implementing budgeting and resource optimization strategies

SELECTED PUBLICATIONS & PRESENTATIONS

75+ peer-reviewed publications in data science, healthcare analytics, health sciences, and methodology

- **Barrett, T.S.** (July 2024). The Past, Present, and Future of data.table. useR! 2024, Salzburg, Austria.
- **Barrett, T.S.** (2020, January). Working with list-columns in data.table. RStudio Conference 2020, San Francisco, CA.
- **Popkov, A. A., Barrett, T. S.**, et al. (2025). Association Between Depression Symptom Severity and Total Cost of Care: Findings from a Large, 2-year, Claims-Based, Retrospective Population Health Study. Journal of Affective Disorders.
- **Rung, J. M., Barrett, T. S.**, et al. (2024). Prevalence and Cost of Routine Preoperative Care for Low-Risk Cataract Surgery a Decade After Choosing Wisely. Ophthalmology.